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Journal of the Society of Arts.

FRIDAY, FEBRUARY 22, 1856.

EXAMINATIONS FOR CANDIDATES FROM INSTITUTIONS ASSOCIATED WITH THE SOCIETY OF ARTS.

The Examinations will commence on Monday the 9th of June, 1856, at the Society's House in the Adelphi.

Candidates who propose to offer themselves for Examination, must give written notice of their intention to the Secretary before the 31st of May, 1856.

All Candidates will be required to possess a competent knowledge of Writing and Spelling.

Every Candidate will be expected to come prepared in two subjects (not subdivisions of subjects) at least.

The Examiners in *Science* merely recommend the text-

books set down: they will be prepared to recognise knowledge however obtained.

The Examination will be conducted by written papers and by oral examination.

The Examiners will award Certificates of Three Classes.

First Class Certificates will be awarded only to a high degree of excellence.

The *Stephenson Prize* of Ten Guineas will be awarded to the Candidate who shall pass the best examination in Mathematics and Mechanics, and obtain a First Class Certificate in each.

Mr. C. Wentworth Dilke, Vice-President of the Society, gives a prize of Ten Guineas, to be awarded to the Candidate who shall pass the best examination in English History, and obtain a First Class Certificate.

Mr. G. N. Hooper gives a prize of Ten Guineas to the Candidate who shall pass the best examination in French, and obtain a First Class Certificate.

NAMES OF THE EXAMINERS.	SUBJECTS.	SUBDIVISIONS.	TEXT BOOKS AND LIMITS.
Rev. Dr. Booth, F.R.S. Mr. Glaisher, F.R.S.	Mathematics	Arithmetic Algebra Euclid Mensuration	Colenso's Arithmetic, to end of Decimal Fractions. Colenso's Algebra, to end of Quadratic Equations. Euclid, books I. II. III., Simson or Potts. Tate's Mensuration.
Mr. C. Brooke, F.R.S. Mr.	Mechanics	Statics. Principles of Mechanism, & their Application to simple Machines, to the Steam Engine, &c.	Galbraith and Haughton's Manual of Mechanics. Bird and Brooke's Elements of Physics.
Professor Solly, F.R.S. Dr. Stenhouse, F.R.S.	Chemistry	Organic and Inorganic	Wilson's Chemistry. Chambers' Educational Fownes' Manual of Chemistry. [Course.
Dr. W. B. Carpenter, F.R.S. Dr. Bence Jones, F.R.S.	Physiology		Carpenter's Manual (<i>Churchill</i>). Coombe's Physiology.
Dr. Carpenter, F.R.S. Professor Henfrey, F.R.S.	Botany	General Structure Systematic Botany	Lindley's School Botany. Henfrey's Rudiments of Botany.
Rev. Dr. Booth, F.R.S. Rev. S. Clark Dean of Hereford	Geography	Political Physical	Milner's Geography (<i>Tract Society</i>). Guyot's Earth and Man (<i>Parker's Edition</i>).
Professor Brewer Rev. F. Temple	English History		Ince's Outlines of English History. A more extensive knowledge of the following reigns: Alfred, William I., John, Henry VIII., Elizabeth, and the Stuarts to the end of the reign of Anne.
Professor Brewer Rev. Dr. Elder Rev. W. Elliott Rev. F. Temple	English Literature and English Composition		Bromby's English Grammar. Chaucer's Prologue to the Canterbury Tales. Spenser's Fairy Queen (first book). Shakespeare, King John, Henry IV., Henry V., Lear, Hamlet, Macbeth, Othello. Bacon, first book of the <i>Novum Organum</i> ; the Preface; fifth and seventh books of the <i>Advancement of Learning</i> . Milton's <i>Paradise Lost</i> . Dryden. Virgil's <i>Æneid</i> , six books. Spectator. Pope's <i>Poetical Works</i> . Butler's <i>Analogy</i> . Wordsworth's <i>Excursion</i> , or Lyrical Ballads. Tennyson. <i>Candidates may take up any two authors of the above.</i>
Professor Browne Mr. Sandford	Latin	Roman History	Sallust, Jugurthine War. Cæsar, first book. To end of Punic Wars, or from that date to the death of Augustus Cæsar. Dawson Turner's Outlines of Roman History.
Mr. Brasseur	French		
Dr. Bernays	German		Trene bis in den Tod, by G. Nieritz. Schiller's Jungfrau von Orleans.

Should the proposed Examinations receive the approbation and support of those classes for whose benefit they are undertaken, namely, employers and candidates for employment, the Council of the Society of Arts will be prepared to take into their consideration the propriety of holding Annual Examinations at several convenient places throughout the country.

Society's House, Adelphi, London, Feb. 20, 1856.

By order,

P. LE NEVE FOSTER, *Secretary*.

TENTH ORDINARY MEETING.

WEDNESDAY, FEBRUARY 20, 1856.

The Tenth Ordinary Meeting of the One Hundred and Second Session was held on Wednesday, the 20th inst. Peter Graham, Esq., in the chair.

The following Candidates were balloted for and duly elected Ordinary Members:—

Correllis, Arthur Alexander	Ransome, James Allen
Hopkinson, Jonathan	Smith, Samuel
Leonard, James	Wright, Charles Edmund
Marryatt, Joseph	

The following Institution has been taken into Union since the last announcement:—

410. Wakefield, Mechanics' Institution.

The paper read was

RECENT IMPROVEMENTS IN CARPET MANUFACTURE, THEIR USE AND ABUSE; WITH A WORD ON BEAUTY AND DEFORMITY IN CARPET DESIGN.

By ALEXANDER WHYTOCK.

The annals of weaving are dull; historians have deemed it more worthy their labour to chronicle the glory of kings, or, with their father, Herodotus, "to rescue from oblivion the great and wondrous deeds displayed both by Greeks and barbarians, and amongst the rest for what cause they waged desperate and bloody war upon each other," than to describe the useful arts which flourished in time of peace. Hence, we are without sufficient data to rear any goodly historical structure from the remnants of antiquity. It is our intention, nevertheless, to essay a sketch, critical and historical it may be, of the carpet manufacture; to trace it through its various phases of development; to record its later and more notable improvements, and to observe the influence of a mistaken economy upon its present condition. We shall also endeavour to investigate the present state of feeling as to the nature of carpet design, with a view to its better understanding.

The strict application, in our day, of the term *carpet*, does not render illegitimate the use of the term in a wider sense, in discoursing upon its original intendment. For here let it be premised, that the carpets and tapestry of ancient and mediæval times cannot be separately treated; the frequent transposition of the terms, and the variety of the purposes to which these articles were mutually applied, quite frustrating such a distinction.

To the process of manufacture, presently extant, we shall hereafter allude. Concerning the process among the ancients, we have no precise information, as indeed none is required, the weaving of carpets and tapestry being then a slow work of the needle, for the delicate hands of a Helen or Penelope. Of Helen it is somewhat sagaciously remarked, by Athenæus, that her fondness for this employment proved her temperance and modesty. King Lemuel, also, in setting forth the character of the virtuous woman, says, "she maketh herself coverings of tapestry." It was an ancient Chaldean gossip that Sardanapalus, attired in female garb, was wont to card purple wool for his concubines, who wrought carpets for the royal household. In Greece, however, the carding of wool was the more usual occupation of slaves, as in the Statesman of Plato, where elaborate analyses of the arts of weaving and felting are given. According to Pliny, the thick flocky wool has been esteemed for the manufacture of carpets from the remotest ages. Early allusion to the shuttle is made, in connexion with this art, and it appears to have been used alternately in the same web with the embroidering needle, if not identical therewith. The several parts of the loom apparatus in active operation, are mentioned by Ovid:—"The web is tied around the beam; the sley separates the warp; the woof is inserted in the middle with sharp shuttles, which the fingers

hurry along, and being drawn within the warp, the teeth notched in the moving sley strike it." But whether this poet be guilty of anachronism in placing a box-wood shuttle in the hands of Minerva we cannot determine. From his description, she was challenged by Arachne, a Colophonian woman, who was very expert in weaving tapestry, to a trial of skill. Her father, Idmon, used to dye the soaking wool in Phœcean purple, and her son, Closter, was the accredited inventor of the spindle. Such was the magnificence of her embroideries, and so graceful her manner of working, that the nymphs hovered around her loom to admire. Minerva accepted the challenge, but the result yielded a doubtful victory, whereat the goddess was duly incensed, and a scuffle ensuing, Arachne hanged herself and was transformed into a spider. The story of Minerva's vengeance is thus recorded:—

"A great fly shuttle in her hand she took,
And more than once, Arachne's forehead struck;
The unhappy maid, impatient of the wrong,
Her injured person from the breast beam hung."

The Babylonians and Parthians were famous for embroidering carpets in different colours; so also were the Gauls, but we are informed by Pliny that they differed in the manner of working. Carthage, Sardis, Phœnice, and Alexandria, among other cities, were celebrated for this manufacture. Some were made having the woolly nap on both sides, but more commonly on one. They were occasionally varied with threads of silk and gold. Among those who are said to have excelled in the manufacture, the names of Pathymias the Egyptian, with Accessas and Helicon of Cyprus, are handed down. Müller conjectures that the two latter exercised their handicraft under the direction of Phidias the sculptor, in the age of Pericles.

Of carpets without certain modifications of colour and pattern, we have, properly speaking, but slight record in antiquity, and none in modern times. We find the carpets of the ancients to have been for the most part beautifully coloured and inwrought with various figures. The carpets of Babylon were particularly extravagant, having representations of animals, both natural and fabulous, embroidered on them. Egypt emblazoned her rugs with hieroglyphs and portraits of her kings, and her tapestries were bespangled with the constellations of heaven, and the twelve signs of the Zodiac. Plautus notices the Alexandrine tapestries to have been figured over with beasts and shells. Sophron, too, speaks of carpets embroidered with figures of birds as of great value; and it was in Gaul they were first made with chequers or tartans. Entire histories, and stories from mythology, were woven in carpets. Homer discovers Helen herself weaving the Trojan wars. Catullus makes mention of carpets used to decorate the wedding feast of Peleus, representing, with wondrous art, the story of Theseus and Ariadne. And Ovid presents Arachne, depicting in the designs of her tapestry, the amours of Jupiter with Europa, Antiope, Leda, Asteria, Danae, and Alcmena; the extreme part of the web, being enclosed in a fine border, had flowers interwoven with the twining ivy. The embroidering of flowers upon carpets originated with the practice of strewing chaplets over the ground, to which frequent reference is made. Dionysius of Syracuse caused his servants to strew wild thyme and roses on the floor of his banquetting-room, "so as really to give the appearance of a most divine meadow," as we are told.

It was a very usual custom among the Greeks, evidently borrowed from the East, to place a carpet upon the couch, and to spread a carpet beneath; thus we read in Plato, "men now distinguish the couches and carpets with an eye to what is put round the couch, and what is placed below." So also in the *Odyssey*; "the white armed Arete commands her handmaidens, having placed couches in the portico for the much-enduring divine Ulysses, to throw upon them beautiful purple rugs, and to strew tapestry beneath." The couch of Telemachus was arranged after the same fashion, and the dog of Procris, probably

in burlesque of Homer's description, was tended in a similar manner:—

"Strew then soft carpets underneath the dog,
And place beneath cloths of Milesian wool,
And put above them all a purple rug."

In the *Æneid*, Rhamnes is slain while "raised high on lofty carpets, snoring forth sleep from his whole breast," and his rich trappings and beautiful carpets are carried off as a booty by Euryalus.

As an instance of the effeminacy of the Medes, Athenæus relates—"It is not enough for them to have their beds softly spread, but they put even the feet of their couches upon carpets, in order that the floor may not present resistance to them, but that the carpets may yield to their pressure." When Alexander took Darius prisoner, he celebrated a marriage feast in an apartment covered with cloths of purple and scarlet and gold, and one of Alexander's companions, Cleitus, surnamed the White, "whenever he was about to transact business, used to converse with every one who came to him while walking about on a purple carpet." In the Agammemnon of *Aeschylus*, we have an illustration of this custom of spreading carpets on the ground. Clytemnestra will not permit Agammemnon, on his return from Troy, to plant the foot which trod down Ilion on the bare ground. "Maidens! why do ye delay," she says, "on whom hath been imposed the task of strewing the surface of the way with tapestry? Let a purple-strewn path be made forthwith." Against which Agammemnon expostulates—"Make not my path obnoxious to the evil eye by strewing it with vestments. With these, indeed, it is fitting to honour the gods, but for one that is a mortal, to walk on embroidered purple, is forme by no means free from dread. Without carpetings and gay fineries, my fame speaks clearly forth." He is, however, eventually persuaded to "trample in these sea-grained vestments and tissues bought with silver," but not until his sandals are loosed from his feet. Purple carpets were greatly sought after by the wealthy patricians of Rome. Metellus Scipio, in the accusation which he brought against Cato, stated, that even in his time, Babylonian covers for couches were selling for 800,000 sesterces (or £4,600), and these, in the time of the Emperor Nero, had risen to four millions (or £23,000.) Lollia Paulina, the great beauty of Rome, in the time of Caligula, rendered herself notorious by the enormous prices given for her rich Babylonian carpets and coverlets. The names of Crassus and Clodius are likewise handed down to us by Pliny, as having squandered vast sums upon these goods. P. Lentulus Spinther, who was curule aedile in the consulship of Cicero, was the first who wore the *praetexta* robe, twice dipped in Tyrian purple, and he was severely censured for it. "Whereas nowadays," writes Cornelius Nepos, "who is there that does not have purple hangings even to his banquetting couch." A detailed account of the ancient Tyrian dye—the "purple blood" of Homer—prepared from the murex, also of the colour made from kermes, may be found in the IX. Book of Pliny's *Natural History*.

In these classic times, carpets were displayed on great occasions of pomp and ceremony, and at funereal and triumphal processions. They were also the many-coloured trappings of elephants and horses. Of such nature were the Phalara of Agesilaus, painted as Ephesus, and of Rhesus's horses in Euripides. Similar were the Trojan housings of Virgil, and those wherewith the golden ass of Apuleius was caparisoned. We have also notice of carpets being the decorations of tombs and cenotaphs. In Arrian's Expedition of Alexander, we read that, "on the golden coffin of Cyrus, son of Cambyses, was placed a covering of Babylonian tapestry, and carpets underneath, of the finest wrought purple." Correspondent whereunto was the burial of steed-breaking Hector, whose ashes being placed in a golden urn, were covered with purple cloths. Such also was the practice in the East at later periods, as in the Arabian tale of "Ganem

the son of Ayoub," where reference is made to this custom of spreading carpets around the tombs.

During the earlier periods of the Moslem sway, when the Eastern muse, albeit pagan enough, was better cultivated, we are favoured with repeated illustrations of the use of carpets and tapestry. The casside of Amralkeise, an Arabian poet, gives us to understand that the colours of the earth are varied, like the tapestry of the kings of Ormuz—a retrogressive comparison. We read also of dwellings furnished with variegated carpets, and gardens hung with tapestry. The manner of using carpets presents little variation in the different quarters of Asia. We may quote the words of Henry Maundrell, who wrote in 1697, as equally descriptive of their use in all parts of the East in former and later times. When at Tripoli he entered some of the Turkish divans; "they are spread," he observes, "with carpets, and furnished all round with bolsters for leaning upon. Upon these the Turks eat, sleep, smoke, receive visits, say their prayers, &c. Their whole delight is in lolling upon them; and in furnishing them richly out is their greatest luxury." This corresponds with the most ancient usage, as well as with the well-known practice in the present day. Accordingly, it is not necessary to give another account, almost precisely the same, from the letters of Lady Mary W. Montague.

The Eastern nations have at all times maintained the well acquired celebrity of their carpet manufacture. In India, where it may be said to have originated, it has survived during many ages, and still continues much as heretofore. In Persia, carpet weaving is the occupation of distinct families and tribes, a knowledge of whose handicraft is entailed from father to son. Sir John McNeil, late British Ambassador at the Court of Persia, brought home an unfinished carpet, which was in progress of manufacture, when the whole family of weavers engaged upon it were totally extirpated by the hands of a hostile tribe.

The manner of manufacture we may safely infer to have been, in former periods, very near akin to what it now is. The simple process of knotting woollen tufts upon cotton or other warp, and crossing each row with a weft shoot, requires no description. On this method the carpets of Mirzapore, Jubbulpore, and Masulipatam, in India, as of other places in Persia and Turkey are produced. Many of the finer carpets of this country, France, and Belgium, are so wrought. The weaving of tapestry has also travelled westward from Asia, but with this difference that it has left no such manufacture behind, if we except the shawls of Cashmere, and other embroideries of a similar nature. The embroidered carpets of Scinde, especially of Hyderabad, are celebrated throughout India. These display a combination of gold, silver, and silk threads, tamboured upon cloth or canvas. When the worker is familiar with a pattern, he proceeds with great swiftness, and no little precision; but when a new design is submitted to him, he first traces it upon the cloth. This is done by perforating the sketch with a needle, thereby indicating its outline upon a sheet of paper, whence it is transferred to the cloth by washing over the holes with white paste. The same mode is practised in making the carpets of Mooltan and Tanjore. Such embroidered carpets have not yet been introduced into this country; the only Indian carpets in general use here being those of Masulipatam.

It would be idle to enumerate the names of the eastern cities where the carpet manufacture has been or is carried on. When Baldach or Bagdad was visited by Marco Polo, about 1255, there was "there a manufacture of silks, wrought with gold, and also of damasks, as well as carpets of velvet (*velluti vel tapeti*) ornamented with figures of birds and beasts." But "the best and hand-somest carpets in the world," he says, "are wrought in Turcomania." Bertrand de la Brocquière, a French traveller, who visited Gallipoli, in 1432, notes that it was there he first saw Turkish carpets made. At the bazaars of the principal cities, these goods are bought from the

weavers, and afterwards purchased by merchants, who convey them to distant markets. Bagdad was long the rendezvous of carpet traders, and through it, during many years, flowed much of the wealth and merchandise of India. Constantinople at a later day became the central emporium for these and all other eastern goods. Benjamin, of Tudela, in the year 1161, describes "the great stir and business which prevails at Constantinople, in consequence," he says, "of the conflux of many merchants who resort thither both by land and sea from all parts of the world, for purposes of trade; including merchants from Babylon and from Mesopotamia, from Media and Persia, from Egypt and Palestine, as well as from Russia, Hungary, and Patzinakia, Budia, Lombardy, and Spain." About three centuries later, De la Brocquière informs us that, "of all the merchants who come to this city, none are so powerful as the Venetians, who have a bailiff to regulate all their affairs, independent of the emperor and his officers." They enjoyed many privileges in consequence of their share in the conquest of the East by the Latins, in 1204, but were deprived of them through the machinations of the Genoese, who assisted in establishing the Greek power at Constantinople, and engrossed the entire European traffic in this quarter, until the ascendancy of the Turks, in 1453, when they were compelled to abandon it. The Venetian traders had been driven to Alexandria, for the produce and manufactures of the East, preserved this market against the Genoese, whose commerce thenceforward declined. The Florentines, however, shared the commercial intercourse with Alexandria, and carried on a large import trade with England, so that with the commencement of the fifteenth century, this country first received regular supplies of eastern merchandise. For, although carpets were introduced so early as the Crusades, they were not yet articles of English commerce. Even in the sixteenth century we meet with few, the Norman practice of spreading rushes on the floor being then generally prevalent. Perlin, a French physician, who visited England in the reign of Edward VI., relates of the London tavern-keepers, that "they strew hay over the floor and place pillows and tapestries underneath their travellers. And Laevinus Lemnius, about the same time, remarks, "the pavements are sprinkled upon, and floors cooled with springing water, and then strewed with sedge, and the parlours trimmed up with greene boughes, freshe herbes and vyne leaves—which things no nation do more decently more trimmely nor more sightly than they do in England; and besyde this, the neate cleanness, the pleasaunte and delightful furniture in every point of household, wonderfully rejoyced mee." We get a very different account of the same custom in a letter of Erasmus to Francisus, physician to Cardinal Wolsey, where he ascribes the plague and sweating sickness, then prevalent in England, to the filth and slovenliness of this usage. "The floors," he writes, "are commonly of clay strewed with rushes, under which lies unmolested a putrid mixture of beer, stinking fragments of food, and all sorts of nastiness." In connexion with this, it may not be uninteresting to quote a further illustration from an incident occurring when Erasmus was at the dinner table of Sir Thomas More:—"A while after," narrates his daughter Margaret, "Gonellus asked leave to see Erasmus his signet ring, which he handed down to him. In passing it back, William, who was occupied in carving a crane, handed it soe negligentlie that it felle to the ground. I never saw such a face as Erasmus made when 'twas picked out from the rushes! And yetours are renewed almost daylie which manie think over-nice. He took it gingerlie in his faire womanlike hands, and washed and wiped it before he put it on, which escaped not my stepmother's displeased notice." Carpets of painted and gilt leather were used about this time, but more as coverlets for beds, cupboards, and tables, than for the floor, Turkey carpets were esteemed among the treasures of the rich. On the Continent of Europe they were more extensively used; indeed, a Venetian merchant or his

customer [in Bruges, Augsburg, or Antwerp, could make a more magnificent display of the wealth of the Orient than could our Monarch Henry VIII. While on the other hand, ladies of good estate in this kingdom, plied the needle with much assiduity, it being considered a mark of high breeding to excel in weaving embroideries of tapestry. Nor was this badge of ladyhood a mere latter-day proverb. The early metrical romances furnish manifold corroboration of its weight in the days of old. Indeed, the word "wife" is itself derived from this occupation. The time when this manufacture was introduced into Europe is uncertain; but, even in the cold north, it has an ancient history. We read in Laxdaela Saga of Olafs banqueting hall at the marriage of Geirmund and Thor-geda being hung with tapestry representing the story of Baldur and the prowess of Thor. A fragment of a poem on this tapestry, composed by Ulf Uggison, has been preserved in the Skalda. The Flemings were at one time famous for their skill in this art, but France was the first European nation which carried it to perfection. The celebrated Bayeux tapestry belongs to the eleventh century. An interesting treatise on this ancient piece of reedlework has lately been published by Dr. Collingwood Bruce. The tapestry of Nancy, known as "Dinner, Supper, and Banquet," was taken from the tent of Charles le Téméraire, after the siege of Lorraine, in 1477. We refer to the work of M. Achille Jubinal, on ancient Historical Tapestries, for specimens of designs embodied in those fabrics. About the beginning of its English history, we find an item in the wardrobe of Edward IV., "Arras, contg. ye story of Parys and Eyleyn, with ymagery of silk." In the reign of Queen Elizabeth, Harrison writes, "the walls of our houses on the inner sides be either hanghed with tapestry arras-work or painted clothe, wherein either divers historics or herbes, beasts, knots [of ribbon], and suchlike, are stained." Of such fantastic illuminated textures, Rabelais furnishes an amusing description. In his "Pantagruel," we are introduced to the country of tapestry; "its trees and herbage," he says, "never lose their leaves or flowers, and are all damasks and flowered velvet." "There we saw many beasts and birds, of the same colour, bigness, and shape, as those in our country, with this difference however, that these did eat nothing, and never sung or bit like ours; and we also saw there many sorts of creatures which we had never seen before." He goes on to say that he went to pluck some myrobolans of a piece of tapestry, whereon they hung, "but the devil abot," he adds, could I chew or swallow them; and had you had them betwixt your teeth, you would have sworn they had been thrown silk, there was no manner of savour in them." Specimens of tapestries of all epochs, arranged in chronological order, are to be found in the museum of the Louvre; and many village churches in the south of France contain ancient religious pieces of no small merit.

The first tapestry manufactory in France, of which we have any authentic record, was that established by an edict of the Castle of Paris, 1295. Henry IV. also brought weavers from Flanders to carry on this manufacture in Paris. The towns of Poitiers and Arras, in the 13th century, likewise contained large manufactories, but these are now no more, and the most ancient still in existence is the national manufactory of Gobelin. Louis XIV. purchased the building then known as *la folle Gobelin* for the purpose of its establishment. It was here that the Brothers Gobelin, descendants of the Secretary to Pope Pius II., exercised their craft of dyeing, a knowledge of which they were said to have borrowed from the evil one. Other three manufactories arose shortly afterwards; one at Aubusson, another at Felletin, and a third at Beauvais. To this day they continue their ingenious but arduous work, which, partly owing to low price of labour, but mainly in consequence of Government encouragement, is no inconsiderable manufacture. Efforts towards its introduction on a similar extensive scale into this country, have been so many failures, attributable to various causes. King James I. established a manufactory at Mortlake, in

Surrey, under the superintendence of Sir Francis Crane. It was here that King Charles II. afterwards caused Raphael's cartoons to be executed in tapestry. These cartoons, designed at the command of Pope Leo X., were sent to be copied at Paris, but were never returned to Rome, his holiness only receiving the copies in tapestry, for which he paid upwards of 400,000 francs. Of the originals, Charles I. bought several on the recommendation of Rubens, which subsequently fell into possession of Oliver Cromwell, but eventually found a place in the gallery of Hampton Court. With the name of Raphael, we may in passing, associate those of Julius Romanus, of Lebrun, Le Sueur, Coypel, David, and others, as artists who have designed for tapestries. The cartoons of Julius Romanus were wrought in tapestry at Brussels, sometime in greater repute for those fabrics than Paris. Glancing at other European States, we observe that Spain once attained a temporary notoriety in this manufacture, that in some parts of Italy and Germany it has been attempted, and that Russia commenced to cultivate the art about seventy years ago.

Considering the process of fabrication in itself, we fail to arrive at the conclusion that it displays much mechanical skill. Howsoever it may have been honoured as the medium of representing some of the finest works of art, it is but a slow and unscientific manipulation. The clearest definition of it would approximate very closely to the darning of a stocking, and whether this be done in a vertical or horizontal position, the result shows little difference. Notwithstanding, the perpendicular or high warp, as it is called, seems the more especially adapted to the correct copying of the design, as it enables the workman to see more justly the effect of his piece. This merely mechanical functionary, however, deserves but small credit for artistic skill—the main portion of the honour falling to him who transfers to the *mise en carte*, or design paper, a copy of the painting which is to be reproduced. Nor is he upon whom devolves the selection of the dyed yarns, and their arrangement for using in the loom, devoid of a share of merit. The more magnificent specimens of this tapestry are intended for the walls of the palace and the castle, while those of a larger warp and coarser material, such as are made at Aubusson, find a more general use on the floor. A large amount of artistic beauty usually pervades the character of those carpet designs, while it must be confessed that the *prestige* of the word "tapestry" goes far to excuse many designs having no pretensions to good taste; and to the indiscriminating their poverty is amply outweighed by their illustrious connexion.

Carpets on the principle of those of Persia and Turkey, with a tufted pile, are now commonly made in Europe. In France they have attained considerable excellence under the style of Savonnerie. Originally confined to Paris, they are now manufactured in Amiens, Turcoing, Nismes, and other places. England has also produced some of the best specimens. The Society of Arts was among the first to encourage the introduction of this manufacture. Very shortly after its institution, it offered premiums for the best imitation Turkey carpets, and thus directed considerable attention to the matter. The Duke of Cumberland, about the same time, lent his patronage to a manufactory of such carpets; and in the year 1755, Mr. Whitty introduced the manufacture into Axminster, whence the fabric derives its name. The Axminster carpet is now a matter of history, as it ceased to be fabricated there several years ago. At Wilton, however, the Messrs. Blackmore do well sustain the character of this manufacture, the superiority of their productions entitling them to the highest credit. Mr. Henry Blackmore has it, that Wilton claims the first introduction of carpet-weaving into England, and has kindly favoured us with the legend concerning it. It seems that one of the Earls of Pembroke, desirous of improving the condition of a small class of weavers in Wilton, induced a skilful French carpet weaver, named Anthony Daffony, to be smuggled

over from France in a sugar-cask, for the purpose of communicating a knowledge of his handicraft, which he did. Within the last fifty years we observe a very great advance in the fabrication of the Anglo-Persian carpets; nor must we omit commendably to notice the Scotch-Persian carpets of Messrs. Gregory, Thomsons and Co. of Kilmarnock, and of Messrs. Richard Whytock and Co., of Edinburgh. This is now a national manufacture of no small amount, although the introduction of other fabrics has operated against a more extended use, and limited the product to a smaller, and perhaps a more select demand.

Hitherto, of the tardy hand-working, and here it is necessary to make a distinction between the hand-wrought or needle-wrought fabric, and that which is the result of mechanical appliance. The former is certainly of more ancient standing, but not the less fallible, while it is necessarily limited. The latter, comparatively of modern date, may be said to have out-manufactured all the productions of the years foregone. The first machine-wrought carpets which we have to notice are of a lower class, being made in the manner and belonging to the variety of what are now termed superfine, Kidderminster, Scotch, or ingrain carpeting. When and where such originated, we cannot surely ascertain, nor is it needful to know. We shall not arrogate to this country the claim or title of the first producer, but we may safely hazard the statement that here and in America the manufacture is principally followed. To practical men an explanation of the process were un-serviceable, but in the estimation of others more or less concerned, a slight indication may be desiderated. The texture consists of two webs woven together at one operation, which by intersecting each other produce the pattern. Warp and weft must both be striped where more than two colours are introduced, and a striped effect being held objectionable, confines this manufacture to the use of two colours, in order to produce a plain or solid figure. As to pattern, it is now mostly the result of the Jacquard, although in other days the drawboy performed the part of this apparatus. And of late the weaver himself has been superseded by the action of the power-loom. In this respect, we must allow that the Americans have outstripped us, while they continue to buy the produce of the English hand-loom. At the Lowell Carpet Factory, on the Merrimack, U.S., there are upwards of 200 power-looms at work on this kind of carpeting. We have failed in our endeavours to ascertain the number of ingrain handlooms in England and Scotland, but it cannot be far short of 2,000.

The three-ply carpet explains its own condition; it is simply different from the in-grain by being composed of three distinct webs, instead of two, and having the advantage of a third solid colour in the figure. To Mr. Thomas Morton, of Kilmarnock, we owe the invention of this triple carpet fabric. This ingenious mechanist, among many improvements, also introduced the revolving barrel studded with pins, to act instead of the draw-boy, in regulating the pattern. Before the introduction into this country of the Jacquard apparatus, this proved very serviceable, but it is now thrown aside. The Venetian and Dutch carpetings, as they are called, are of a simple character, and of less capacity for design. The Venetian consists mainly of a heavy weft-shoot, and is a weighty but soft material. In small diced patterns alone does it look well. The Dutch, originally a cow-hair texture, is now made of the lower qualities of wool; it is also a single web, and admits of nothing beyond stripes and chequers in its design. We need not observe that these fabrics have little connexion with the places whence they derive their name.

In treating of the Brussels carpet, we revert to the capital of Belgium to find little trace of such a manufacture there, although its name corresponds to the place of its origin. It is, perhaps, a fabric more thoroughly English in its present manufacture than of any other country. About the year 1735, we find the town of Kidderminster, hitherto famous for broad cloth, becoming the nursery of

the English Brussels carpet. The progress of the manufacture in this town has been slow but steady, and after the lapse of a hundred years, we find it, in 1838, containing about 1765 Brussels hand-loom, besides a smaller proportion of ingrain and common qualities, giving employment to upwards of 4000 hands. That was eighteen years ago, and since then the introduction of the power-loom has caused many hand-frames to cease, and matters being thus in a transition state, there is difficulty in fairly computing statistics. A manufacturer may have so many hundred looms, a considerable portion of which may be held in abeyance while he is introducing power. In 1851, there were upwards of 2000 Brussels hand-loom in Kidderminster, besides many in Halifax, Durham, Kilmarnock, and districts in the north of England, and south of Scotland.

The peculiar beauty of the raised pile in the Brussels carpet will, we conceive, never lack its due appreciation. It has a corded appearance without a cord; and the elasticity of the worsted yarn—we speak of good qualities—imparts to the fabric a soft but substantial character. We need not here minutely detail all the intricacies of the manufacture. The weaver draws his worsted warp from several large frames, generally five in number, occasionally more or less, on each of which are placed 260 bobbins of a self colour for the ordinary width.* To produce the pattern, which is now effected by Jacquard, only one-fifth part of the five-frame warp appears on the surface; each frame interchanging its self colour threads as the pattern demands. By passing the worsted warp yarn over a wire, and then fixing it by weft-shoot, and afterwards withdrawing the wire, the corded appearance is produced. By introducing a grooved wire, the Moquette, Wilton, or Tournai carpet is made; the wire being released by a knife passing along its groove, and cutting open the yarn into a velvet pile. As bearing upon this manufacture, the invention of Mr. Richard Whytock, of Edinburgh, which has preserved all the proper characteristics of the Brussels and Wilton carpet, with a greater economy, demands consideration; and here we cannot construe a better description of both fabrics, nor furnish a better abstract of their comparative merits than by quoting the words of the distinguished geologist, Hugh Miller. The study of the earth's strata has afforded him a keen insight into the relative position of layers of threads in these textures. "Every one must have observed, in the structure of the common Brussels carpet a very great waste of materials. Suppose the pattern rich—the colours numerous—that groups of mimic flowers cluster in the gaily-framed compartments, or run in festoons along the squares, and that fantastic compound figures, which represent only themselves, blend with their usual accompaniments of fruit, flowers, and foliage. Each one of the colours employed, though employed in but the shading of a leaf, or of a petal, must yet be formed by continuously-coloured thread, running from end to end of the carpet. Every dot of colour has thus its continuous layer of thread, that, extending the whole length of the web, rises to the sight at intervals, to perform its part in the pattern, and then, sinking into the body of the fabric, serves but to add there to its expense and bulk. A single Brussels carpet may be thus regarded as a series of carpets laid wastefully over one another, with this disadvantage, too, that when the upper carpet wears out, all the others become useless. How remedy this defect by producing, with a single layer of coloured thread, the effect of many layers, retaining, meanwhile, every peculiarity of the rich Brussels fabric? How make *one* carpet serve for the many carpets wrought up together in the ordinary way?

* In the existing state of the Brussels carpet trade, fabrics of two, three, or four frames, having respectively two-fifths, three-fifths, and four-fifths of the full complement of worsted yarn, occupy an important place. Hence has arisen a popular delusion that one Brussels carpet is as good as another, whether it be two or five frames, the disparity of quality not being considered in relation to price.

The question must have been often asked; and the well-known mode of printing calicoes must have often suggested an answer. But the plan of stamping, instead of weaving, could never be brought to succeed. The surface of strong woollen thread raised into loops, or cut open into a bristly elastic pile, was not only injured by the blocks, but it also failed adequately to receive from them the required pattern. Every attempt to print the Brussels carpet turned out a failure. Mr. Whytock applied his mind to the subject, and arrived at his conclusions regarding it by a curious, and yet what may seem, when the mode is described, sufficiently simple process. Take a piece of calico, bearing a complicated and handsome pattern; pull out the threads of which it is composed, and then mark the appearance of each individual thread. As seen analysed on every thread, if we may so speak, the pattern will seem but a number of succeeding bars of colour. The single thread, for half an inch or so, will be, mayhap, a green thread, for half an inch more, mayhap, a red thread—here black, there white, and so on in accordance with the peculiar line of the pattern which it chances to traverse. And thus the whole pattern may be resolved into a number of variously barred threads. But if it be thus easy to resolve a pattern stamped on cloth into a number of barred threads, it must be at least possible to resolve a number of barred threads into a pattern. It is much easier to convert a palace into a heap of stones than a heap of stones into a palace, but both processes are equally possible. Such were the reasonings of Mr. Whytock; and, on the principle which they embody, he set himself to build up beautiful and tasteful patterns of barred threads, in order to produce a Brussels pattern of but one layer of coloured worsteds. We need scarce remind the reader of the amount of nice calculation and ingenious contrivance which his task must have involved. Every carpet consists of repetitions of certain sets of patterns, and so there must be a recurrence of the same sort of threads. But no two threads barred in exactly the same fashion go together. There is a continual variation, on whose nice adjustment the integrity of the pattern depends, and hence the necessity of much care and correctness in the calculations. In the thread, too, the bars of colour have to be broader in a certain proportion, than it is intended they should seem in the cloth, as allowance has to be made for the amount of thread lost in the loop or pile which forms the surface; and so the pattern in the warp had to be made quite a different sort of thing from the proposed pattern in the web; hence another set of difficulties. But Mr. Whytock succeeded in overcoming them all, and in producing in the Brussels tissue, patterns of even greater beauty than in the manyplied carpets woven in the common style. We were much interested in his manufactory to see how simple the operation performed by each set of his mechanics in the different manufactures, and yet how regularly the complicated whole grew under their hands. One set of workmen were employed in carefully streaking across with colours, sets of threads spread on huge cylinders. Another set were engaged in fixing the dyes. A third set in setting up the threads after a given manner for the warp of the projected web. A fourth in weaving. All of them seemed to be workers in the dark, so far as the pattern was concerned; they merely measured off certain bars of colours after certain given proportions, or stretched in a particular given fashion a certain number of threads across a frame; or, when stretched and arranged, wove them into a web, and yet the patterns sprung up before them complete in every sprig, leaf, and petal, as if it had been as much a thing of spontaneous growth as the mosses and wild flowers of our woods and moors. The whole reminded us, in connection with the producing workmen, of those nice operations of instinct through which the wasp has been converted into so skilful a paper-maker, though unacquainted with the principles of his art, and the bee into so excellent a practical mathematician, without knowing anything of theoretic geometry."

The economy of this improvement is to this day far from being thoroughly understood, even while it adds so largely to the carpet produce of the country; for not only is the jacquard superseded and the large frames done away with, but it is possible to place three looms to be occupied on this new fabric into the space which one Brussels loom requires. One beam is substituted for thirteen hundred little beams or bobbins, and a better cover is made with 780 threads than with 2,600. In so far as it may concern the printing, it precedes not only the weaving, but the warping, and all patterns are produced by means of the same blocks; to wit, the wooden pulley revolving in its box of colour. If it is intended to have many repetitions of the same object in the course of the web, a fuschia bud, for instance, the coiling of the yarn round the cylinder brings all those buds, it may be thousands, which are to follow each other, equi-distantly in the same line, into such position that the opening of each bud may receive simultaneously its glowing tint. They are, as it were, brought into the position of the congregated necks of the Roman citizens which Nero desiderated, that one stroke might ensanguine them all. Pliny, who narrates as a marvel, that he had seen the fleece upon the living animal dyed purple, and scarlet, and violet, just as though they had been produced by nature in this form to meet the demand of luxury, would here indeed have a greater wonder to record, and Raphael would have congratulated himself on such a method of representing in tapestry his cartoons. As a proximate indication, the British tapestry of Messrs. Henderson and Widnell, of Lasswade, and the Arras ecossais of Mr. Whytock, may be cited. Such, indeed, is the true position and capacity of this colouring process, but the downward course of all manufactures in this country has only caused the invention, in great part, as yet to assist in gorging the market with carpets for the million. Particularly, of late years, the use of a low quality of material, and a very small quantity even of that, produces a flimsy article, which has tended greatly to disgust even the all-consuming and most unfastidious million itself.

The Patent Axminster carpets of Mr. James Templeton, of Glasgow, demand our favourable notice. Although bearing the name of a place once celebrated for its Anglo-Persian carpets with tufted pile, they are made on the Chenille principle, the worsted yarn being thrown in as woof instead of being inserted by hand-knotting. Mr. Templeton has the merit of having produced some of the very finest specimens of carpeting and rugs which this country has seen, and may fairly be said to rival the Axminster, the article being also produced with less labour and expense. Until very lately this manufacture was confined to Glasgow, but has now been successfully introduced into France.

In regard to the introduction of power-looms, their application has been so far tested that we may consider their success to be a matter of certainty. We shall proceed to enumerate the various inventions bearing upon the subject. That of M. Sievier is an attempt to knock up a Brussels pile without the use of the wire, but only applicable to the weaving of one layer of white and plain worsted warp, presenting a surface afterwards to receive its pattern from the printing of blocks. Mr. Burch patented a process to facilitate this printing operation, the result of both these inventions produces the carpets of Mr. Bright, of Manchester, which, from the cheapness of the manufacture, have commanded a large export sale. In 1842, Mr. Wood took out the first patent for weaving the regular Brussels carpet by steam-power, and since then the power loom has grown gradually to a state of comparative perfection. Mr. Bigelow, of the United States, has acquired a very notable name for his improved carpet-weaving machinery, in the framing of which the saving of labour is the principal feature. A later improvement has been patented by Mr. Fawcett, of Kidderminster, which has for its object the saving of material; and in the years 1852-3, Mr. W. Wild, of

Manchester, patented still further improvements, affecting the better regulation of the Brussels wire movement. The average result of all this organisation is that one power-loom can weave from four to five times the amount of one hand-loom, besides requiring a less number of hands, and producing a better and more regularly woven fabric. We may estimate the number of Brussels power-looms in England to be somewhere about 250, while the present aspect of the trade warrants the expectation, that within a very few years the number will be doubled. Mr. Crossley, of Halifax, informs me that there are in existence nearly 600 power-looms upon Mr. Whytock's patent process, capable of producing at the rate of 10,000 yards *per diem*.

The superiority—we might almost say the supremacy of the English—in the adaptation of mechanical agencies to textile fabrics, here admits of striking illustration. Second to none in this sphere of British enterprise is the firm of Messrs. John Crossley and Sons, of Halifax. Besides having done their utmost to develop the possibilities of Mr. Whytock's invention (in which they have been most successful), they have also been the most forward to avail themselves of all new appliances to the perfecting and economic production of the Brussels texture.

Thus much descriptive of the various productive processes; it remains to consider a more unwelcome feature in the present condition of the carpet manufacture. It is much to be lamented, but not to be concealed, that the principle of deterioration should be so alarmingly practised in our English manufactures. One reason of the success attendant upon the textile productions of France may be found in the reversion of the proverb—“*Meliora probant, deteriora sequuntur.*” In France they read—“*Meliora et meliora sequuntur;*” they go on improving, emulating better things; we are prone to deteriorate, and vie with each other in producing the cheapest lot of rubbish. Where French goods show a lower quality, we may easily discover that they are *got up* for the “nation of shopkeepers.” The English manufacturer is much to be commiserated. He finds himself the victim of a circumstance of evil economy. His manufactory increases with a gigantic growth, to meet an increasing demand, which being supplied for a time, leaves the instrument of a rapid accumulation perhaps to whelm its owner. The monster of Frankenstein here finds a fitting parallel. The monster manufactory is inexorable, and would devour its maker when he ceases to feed its iron jaws. It must be fed, and its product accumulating, terrifies the manufacturer to flee to the false refuge of *reduced prices*,—prices which would go near to eat out their victim but for a corresponding reduction of quality and an unrighteous lowering of wages. These reductions cannot confine their influence to one manufactory alone, and the panic involves a general deterioration—a deterioration resulting in ruin. The effects of this have even already vibrated across the Atlantic, and unroofed a large establishment in Troy, U.S. Neither can we hope against hope that this may prove a solitary instance. This is an abuse which we cannot too prominently point at with the finger of warning, nor too unmercifully arraign and condemn.

Still another evil might be adverted to in terms of reprehension. No sooner does an ingenious manufacturer invent a new and excellent fabric, or protect, by letters patent, some useful improvement, than evasion is attempted by a low class of interloping traders. While the more manly-hearted and honourable acknowledge the merit of an invention, and lend their aid to its encouragement, they find their efforts counteracted by the depredations of rascally poachers. This is an occult science of thieving, against which the arm of prescribed law cannot be uplifted. The enactments of civilization penal to open crime, cast a set of tricksters upon their cunning, to plunder by more insidious methods.

We have thus far attempted to note the history of the carpet manufacture, dwelling at some length upon what appears to us its more interesting features. We have

attempted to describe its later improvements, and to exhibit its present condition, to show wherein its true economy consists, as opposed to the false economy and practical folly of the deterioration process, which degrades manufacturing art to the level of the *low*, instead of trying to elevate the low to a higher appreciation. We shall now venture to inquire into the constituents of what is relatively good and bad in carpet design. It is not our province to speculate on those unequally discerned laws of the beautiful, whose neglect or transgression results in the un-beautiful; neither shall we enter at large upon those which are essential to beauty in form, with its contingents. This many-sided paradox has already found stammerers enough, essaying to umpire its apparent dissensions and oraculate its laws, but which have not yet received an appropriate investiture of language. It may be said, generally, that they are the conditions whereunto the external must conform, in order to excite within the soul pleasing and grateful emotions—an objective truth appealing to a subjective faith. And more particularly, that all authentic ornamentation must exhibit a certain degree of conformity to organic development, or observance of mathematical proportion. But this is a loose and vague circumscription. It may further be insisted, between what points is the line of beauty to be drawn? At what point is conformity exceeded? What point verges on deformity? To the strict imitator an exact conformity cannot be exceeded. To the caricaturist its very exactness is deformity. An explanation is here wanted. The matter may be said to assume two phases, resolvable into two schools, both opinionative enough, and whereon are hinged all those strivings about the law of ornamental design, which are unprofitable and vain. The one enjoins the exact imitation of nature, the other maintains with equal plausibility the virtue of nature travestied. This latter, while viewed historically, in so far as it may enter into the composition of the various traditional forms of ornament, is also regarded as the basis for new operations. The imitative is dogmatic, and with much good has bred many evils; the travesty is high sounding but indeterminate, and while affording greater scope to the invention of the artist, yields a corresponding liability to error. Schiller has finely observed upon the detrimental effects resulting from the pretensions of the imagination to arrogate to itself the legislative where it only possesses the executive power. The imitative may yet be reclaimed from its prodigality; the travesty not yet launched upon the world in any new form has been guilty of no recent improprieties, unless, indeed, the very prodigality of the first may have arisen from a straining after a novel manifestation of the second. And for the rest, this vexed question is likely to live ever without settling, and truly, the solution of the problem were a consummation devoutly to be avoided. In our opinion, both are allowable, and neither can be circumscribed with laws sufficiently explicit to prevent their distortion. Their laws cannot, properly speaking, receive utterance, they are the intuitive sentiment of a discriminative good taste. Thus much concerning imitation and burlesque. We now come to another series of difficulties emanating from the mathematical or geometric school. As among certain Grecian philosophers, the science of geometry was exalted above, as embracing, all other philosophies, so do some ornamentationists of our own day strive to exalt it as the self-containing principle over every other style of ornamental art. This is a naked fallacy, scarce requiring exposure. Each ornamental style is *sui generis*, having a separate constitution and government, disdaining alliance with any other. The hermaphrodite needs not to have his shield quartered. Suppose we reduce the Gothic, Egyptian, and Moresque to one geometric original, does it follow, therefore, that these heterogeneous kinds of ornamentation should be mingled together, and used promiscuously in the composition of one design? By no means. They may be resolvable into straight lines or squares, into cycloids or circles, but nevertheless,

each has its peculiar characteristics, its periodic development, its individual or national idiosyncracies, and must be employed with purity in the science of tectonic decoration—a purity not consisting of a simple copying of received originals, although partly dependant upon that as an initiation into its mysteries, an education to the production of new examples. We believe this heresy to be mainly at the bottom of the present Babel of designing, although we are far from denying the truth of the geometric principle in itself. It has been urged beyond its proper domain. But we are not yet quietly permitted to acknowledge the propriety of the recognised styles of ornamental art, by reason of a silly and trivial objection brought against them. We are told that they are traditional. It might likewise be insinuated that language is traditional, and man himself a tradition. This would not cause us to think the less of either, but, perhaps, rather the more. Certain styles of architecture being also traditional, require a corresponding adaptation of ornamental forms. That there are fixed and immutable principles affecting their nature and composition, from which they may have, one and all, more or less diverged, may be an orthodox creed, but it is equally true that they are undefinable, and that man has a strong faith in the cogency of precedents. Thus we have seen that a spirit of enquiry, not having been tempered with a spirit of toleration, and viewing a many-sided question from one side alone, has degenerated into dogmatism. It is thus that the imitator and caricaturist ignore the artistic title of each other. It is thus the geometrician determines within "the epicycle of his brain" that every coin should bear the image and superscription of his reigning idea. And it is thus the transcendentalist would in one word consign to oblivion what has been the growth of ages. Let us exercise a liberal judgment, and, by comparing the parts, establish the whole. Then let us modestly confess ourselves to be, after a sort, merely "ignorant admirers," having but a sorry insight into the very nature of the object of our admiration. A true feeling of beauty is in part unconscious, which, when interrogated, is constrained to reply, in the words of St. Augustine, "—if not asked, I know; but attempting to explain, I know not." Considering the object negatively, as implying a negation of beauty, we may infer, by antithesis, certain positive aesthetic principles; but, however well we may know the opposite extremes of conditional beauty and deformity, yet, as to their points of difference, the opinions of ornamentationists vary with the thickness of the line drawn between them. From all this, therefore, it should follow, as a corollary, that we regard with equal favour every fresh example of merit achieved by the disciples of the geometric school, as well as by those who tastefully imitate or gracefully travesty the organic forms of nature.

Now, be it remarked, in relation to the carpet, that every school of ornament affords capabilities for floor treatment; and here *flatness* is a law which seems to be conditionally borne out by the nature of the case. The arabesque, when so treated, is unexceptionable. We do not allude to that conventional form which might more properly be styled *Raphaelesque*; we use the term arabesque in its broader and original acceptation. The diaper or flat decorative, which all classes of ornament may be said to possess in some degree, we must esteem eminently suitable. Such are the delicate traceries of the Etruscan school, the involved curvings and interwindings of the moresque, the well-defined mosaic of the Roman and Byzantine, the leafy growth of the Grecian, the spreading lotus and graceful papyrus of the Egyptian, the solid parquetry of the Gothic and Elizabethan; and such is the bizarre Turkey carpet, the bejewelled Persian, and the inlaid flower-work of the Indian; nor is the vigorous grotesque of Chinese and Japanese ornament entirely below our using. The study of each individual style of ornamentation in respect of the elements of which it is compact, would materially aid in forming a correct idea of

what is here most appropriate. Without entering upon these discursively, we may content ourselves with tracing the source of such a class of designs as may have become associated with the carpets of the East. Among the Mahomedans, the prohibition of the Sunni sect against the copying of animals and plants has now obtained almost entire observance in their carpet designs, whereas the laxity of the Shiah sect on this head, yielded in former times many specimens of that portraiture belonging to the imitative, which might be questionable enough on a floor. How else should we account for the fountain of lions and paintings in the Hall of Justice in the Alhambra? This building may be held as exhibiting in its decorations the comparative pretensions of the two sects at the period of its erection. An early aptitude for the flat ornamentation seems to have been developed with the faith of Islam. The carpets of Persia and Turkey expose to view an elaborate mosaic of jewels. We see in them no want of mathematical arrangement, but, on the contrary, a well-balanced proportion, whose beauty a happy arrangement of colour tends not a little to enhance. The copying of these designs, however, for English manufacture, is not always equally good, an especial failure in colour being frequently remarkable. The Indian carpet is not altogether so fantastic as the Mussulman. Some of them have a very irregular appearance, which is, nevertheless, a result of regular distribution. If any are not diagonal, yet, as Sir David Brewster has observed in the *Edinburgh Review*, "when viewed from different obliquities, as on a floor, they present a pleasing and natural perspective;" at the same time, a preference is shown to mathematical proportion. The Indian colouring is mostly warm and mild, save in a few instances, where it inclines towards the red chalk and yellow ochre.

A vulgar error of daily practice now claims consideration. We know not to whom we are indebted as the disturber of a false theory of shadows, lying at the root of much that is incongruous and unpleasing in the carpet pattern; but, assuredly, we are sensible of the force of the disturbance. The abstract question of light and shade is not here admissible; it is the inappropriate employment of shadow in design which merits our reprehension. Shadow is used to give prominent effect to an object, and to use it well requires adaptation to the nature of the light diffused throughout the room to be decorated. On a wall or a ceiling, it is lawful under certain restrictions, but on a floor, it is in the last degree criminal alike against good taste and common sense. If this illusion of shadows were complete as attempted on the carpet, we could not but associate with it a painful feeling—a feeling as though we were walking on an uneven surface. Not only so, but the practical difficulty of treating it correctly is almost insuperable, for, the shadow falling away from the light, the apartment must be so lighted as to preserve the illusive effect. Suppose a chandelier to hang from the ceiling, the shadows must fall towards the walls of the chamber, but daylight must also be distributed from the same point, by cupola or sky-light, else by a side-light the shadows were false. Under a cross-light almost no system of shading could be carried out in the design of the carpet. It were a problem similar to that fabled region of the earth, where, as wise men of old time gravely believed, for twice forty-five days in the year, at the period of the solstice, the shadows fall *in contrarium*—in opposite directions. When the light of the sun, and the light of the lamp are admitted or dispensed from different, from opposite or from many quarters, the adjustment of conflicting shadows might well present an inexplicable sphinx riddle. The principle is radically wrong, and generally accompanies designs where the architectural or decorative of a wall or ceiling is transferred to the floor. Here we are treading on Gothic windows, stumbling over carved oaken bosses, or against the timber of a groined roof; there a massive gilt scroll-work of Louis Quatorze, encircles a perspective of trees and the eternal hills, and in some we have only to cast our eyes on the

ground, and we shall see, rolling there, the blue sky of our antipodes.

There are those who condemn the use of a good thing, because they have only known its abuse. Floral or chintz design has become obnoxious to this prejudgment. Essentially of the imitative school, it finds little favour in the eyes of the caricaturist; while yet many of its faults are traceable to its departure from exactness. That flowers may be produced which the botanist can classify with accuracy, is thus a glory or a shame as you view it. Perhaps it may yet be demonstrated to the satisfaction of all concerned that many of those authentic styles of ornament, by us believed to be travesties, were originally considered by their first artists most excellent imitations. Indeed, in those eastern countries, whence we derive a considerable share of the carpets here in use, it is singular to observe the preference evinced by the natives for our exact imitations over their own productions. Many an Indian Rajah, a worshipper of cows, who bestows upon his divinity the best gifts of his substance, deems it no ordinary propitiation to present his favourite animal with a patent velvet pile carpet, glorious in all hues of nature, whereon to repose. In this country, for the present, floral taste has been in great part cloyed with a meretricious class of design, and hence this loathing of what is pure. Those who are above the baneful influence of such vitiated examples, can yet afford to admire much that is beautiful and simple in the flower composition. An ancient author has told us that beauty is the flower of health, and although our Flora be labouring under a temporary malady, the disease is not incurable. A healthy complexion will, ere long, declare the good condition of its essence. We cast no horoscope to divine the continued favour which will be shown to every well-devised treatment of the natural flower and foliage.

The great antiquity of heraldry, fostered by the pride of blood, may serve as an excuse for the blazoning of scutcheons on woven fabrics. To the influence of this doubtful species of ornamental art, we confess ourselves not a little beholden. "Every man of the children of Israel shall pitch by his own standard, with the ensign of their father's house," is the mosaic record of armorial bearings, carrying us as far back as we care to go, and inferring the devices of all nations and families from that day to this. Some have even contended for it a divine origin, concluding from the visions of the prophets. English ideas of heraldry are intimately wound up with the prevailing Teutonic element of our character. Hence our appropriation of the Gothic style in its adjunctive decoration. Nevertheless, we must allow this heraldic emblemising to be a homogeneous and universal symbology, embracing the hieroglyphics of Egypt no less than every cognisance of our herald's books. From a practical point of view, it recommends itself to us by virtue of its *flatness*, but must of necessity have a limited use. It has, however, the advantage of being only suitable for the decoration of that house whose coat-of-arms is represented, and on this account, even although it were open to objection, is free from being common. These remarks apply in some measure also to the clan tartans of Scotland, which are now attaining a questionable notoriety in the Brussels carpet. Although properly the distinctive style of a Highland clan, and confined to articles of dress, they have traversed their ancient limits, and are now also the fancy of the Southron for his person, and, however strange it may appear, for his house decoration. We might dispute the propriety of this taste, and the feasibility of attempting to produce on the warp surface of the Brussels fabric a semblance of the warp and weft clan tartan. In the light of fashion, however, it must needs be endured, but let a *veto* be passed against the representation of philabegs and sporrans, dirks and bagpipes, on any respectable carpet. No excuse of heraldry can serve their apology. We shall conclude with the words of Sir Thomas Browne, that "whimsicallest knight," as Coleridge called him, and let him play the *Oedipus* in this controversy:—

"We will not question the tongues of adders and vipers, described like an anchor, nor the picture of the *fleur-de-lis*, though, how far they agree unto the natural draughts, let every spectator determine. We will dispense with bears with long tails, such as are described in the figures of heaven; we shall tolerate flying horses, black swans, hydra-centaurs, harpies, and satyrs; for these are monstrosities, rarities, or else poetical fancies, whose shadowed moralities requite their substantial falsities. Wherein, indeed, we must not deny a liberty; nor is the hand of the painter more restrainable than the pen of the poet. But when the real works of nature or veritable acts of story are to be described, digressions are aberrations, and art being but the imitator or secondary representor, it must not vary from the verity of the example, or describe things otherwise than they truly are or have been. For hereby introducing false ideas of things, it perverts and deforms the face and symmetry of truth."

Before taking leave of our subject, we must not neglect to speak of the beneficial effects resulting from the Great Exhibition of 1851, and the French Exposition of 1855. A comparison of the various carpet fabrics there exhibited has tended to form a better and more correct apprehension of the nature and wants of the manufacture. A more decided improvement in design must be patent to all familiar with the trade, and a better educated taste is brought to bear upon its condition. As a necessary consequent, the position of the artist is more fully recognised, and perhaps it may yet be acknowledged that the producing powers of artistic skill in the matter of design, require quite as large a handling as in the grouping of an historical piece.

DISCUSSION.

Mr. George WALLIS (Government School of Art, Birmingham,) says, in a note to the Secretary, that "it may be of some interest to state the origin of the application and extent of the operations in the United States, of Mr. Bigelow's power loom for weaving Brussels carpets.

"When I visited Clinton, Massachusetts, in 1853, there were thirty looms at work in the Bigelow Carpet Company's Factory, and others in the course of erection. Those in full operation were producing from twenty to twenty-four yards each per day, and in special cases 32½ yards. Each loom was attended by one weaver, a female. The goods varied in width ¾ths, ¾ths, and one yard. Mr. Fairbanks, Mr. Bigelow's partner, who kindly accompanied me from Boston, informed me that the carpet loom was simply the extension of the principle originally applied by Mr. Bigelow to the manufacture of coach-lace by power. There were 100 of these coach-lace looms in full work in the Clinton Manufacturing Company's Factory, (a distinct concern from the Carpet Company) when I went over it. The origin of the carpet loom was visible enough to the most casual observer."

Mr. J. G. CRACE, in a letter to the Secretary, says:—

"I regret very much that I am prevented, by a particular engagement, from attending the reading of Mr. Whytock's paper on Carpets this evening, and my inability, therefore, to take part in the subsequent discussion to which you have kindly invited me.

"If I were present I should certainly venture to offer some remarks on the present state of carpet manufacture, more particularly as regards the suitability of designs, and the arrangement of colours.

"I fear, if a competent opinion were given upon the hundreds of designs of carpets annually produced in this country, that few, indeed, would be commended for their true taste. In this the manufacturer is not wholly to blame, for I am aware that there is a scarcity of clever and able designers; but, on the other hand, I think that little judgment and discrimination are shown in the choice of designs, and far too small a remuneration is generally given.

"In the cheaper kinds of carpets, I would avoid grand, scrawling designs, and adopt a simpler geometric style of ornament, allowing of good contrasts of colour, far more effective, and in better keeping for the rooms in which they are generally used.

"Alluding next to Brussels carpets, the designs very rarely indeed express the nature of the material to which they ought to be adapted; and, what is worse, very frequently outrage common sense, by imitating objects in relief with their own proper shadows and cast shadows. In one of our best carpet warehouses I have remarked a design called Elizabethan, which was indeed a most accurate copy of a plaster ceiling at Hatfield-house, all the filletings and mouldings, with their shadowed projections are faithfully copied, and the compartments filled with strongly contrasted grounds of colour. A Gothic carpet is usually represented by a copy of some stone tracery, with all its mouldings so well shaded that one feels in treading on it as if walking on an ornamental gridiron.

"Did it never occur to our manufacturers or designers to seek in representations of the period, where designs of carpets and stuffs are frequent for appropriate examples either in tapestry pictures, or paintings, or engravings. Never will they find the designs appropriate for wood or stone carving applied to woven fabrics.

"It is the very essence of a carpet design that perfect flatness be preserved. Do not think that I would avoid natural flowers and other ornamental objects,—on the contrary, I wish to show that, by a judicious arrangement, these can be made to tell with far greater breadth, clearness, and beauty.

"In the coarser kinds of French tapestry carpets, it may have been remarked that each shadow of a flower, or leaf, or scroll, is given quite flatly, as if *appliqué*, producing by its breadth and clearness far more beauty of effect than if shaded like a painting. I do not object to flowers thus treated in a carpet, but I still consider they would be more appropriately introduced when drawn conventionally, suggesting the ornaments in a design without any kind of shadow.

"How beautiful are the designs of many of the carpets we receive from the East, more especially from India, where the rules that I advocate are most perfectly carried out. It is true, as Mr. Whytock has observed, the present natives of India much prefer the gay colouring of our own English carpets, but it must be remembered that the designs they now weave are descended to them from times far remote, when their knowledge of the arts and sciences was far above what it now is. I am delighted to find that considerable advance is making both in the quality, facility of manufacture, and the introduction of additional colours in Brussels carpets, for these will always be the principal kind of carpets used in this country.

"I think it would be very desirable if some distinctive mark or warranty as to the particular quality of carpet was adopted by respectable manufacturers, showing which had a three-thread ground, also the number of threads of worsted between each string of hemp. But this will be better discussed by others understanding more fully than myself the minutiae of the manufacture.

"I now come to the Axminster and tapestry carpets. About sixty years ago, it may be more, there existed at Axminster, in Devon, a manufactory of carpets, the parent of the one now carried on at Wilton. In various noblemen's seats throughout the country, I have many times found carpets of most beautiful design, rich and varied in colour and form, fully carrying out the true principles, of excellent quality, tremendous substance, still looking grand and handsome, though faded and dirty, the glory of our carpet manufacture once, and far better than any we produce now. These are the carpets of sixty years ago, made at the factory at Axminster. It is evident that for the designs of those carpets men of first-rate talent were engaged, fully equal in ability to those now possessed by France. Again would I impress on our

manufacturers, pay liberally for your patterns, get fewer of them, and study them more.

"The factory at Axminster was removed to Wilton, where it now exists, possessing still, I believe, many of the old designs, but though the quality of the carpets produced there is still excellent, indeed the most solid of any produced in this country, yet I cannot say quite so much in favour of the new designs as of those sixty years ago.

"The tapestry carpets of Messrs. Whytock and Messrs. Crossley, and the Patent Axminster of Messrs. Templeton, are most ingenious inventions, and admit of great variety and richness of colouring, but the very facilities acquired of introducing any number of colours have led to a redundancy of the colours employed, and thereby a want of that repose so essential to a tasteful carpet, and this leads me to the subject of colour.

"I fear that manufacturers too often forget that a carpet, however beautiful in itself, is not the only object to be considered in a room. It ought to form only one part of a picturesque whole—not destroying the decorations and colouring of the walls and ceilings, nor the draperies and furniture; but harmonising with them, and from its very mass preserving so quiet an appearance as not to come too strongly before the rest. But granted even that the walls are too quiet or too bad to be injured by the gaudiness of the carpet, there are still the fair occupants of the room to be considered; their dresses, and even their beauty, may be sadly injured by the too glaring gaiety of what they tread upon.

"On the other hand, I most thoroughly abominate those shades of drab and stone, those tones of dirt, so recommended that dirt may not be seen upon them. However aggravating may be over-gaiety, I prefer it infinitely, with its freshness, to the dingy dirty shades, almost always, be it observed in the shape of inappropriate shaded scrolls, or gridiron ornaments.

"But these are the two extremes produced by ignorance in the science of the harmony and powers of colours. Our manufacturers, if not knowing much of the subject themselves, should, at any rate, have their sons trained to an intimate knowledge of this important branch of their trade, for, however well-drawn may be a design, it will probably be sacrificed if competent skill is not displayed in the varieties of its colouring."

Mr. Crossley, M.P., said they must all feel very much indebted to their friend Mr. Whytock, for the great care and research he had shown in order to give them the history of carpet manufacture for so long a time back; and he (Mr. Crossley) begged also to thank him for the flattering manner in which he had mentioned the firm of which he had the honour to be a member. He must, however, take exception to some remarks Mr. Whytock had thought proper to make upon tapestry carpets. He had stated that of late years the material had been so bad, and the quantity of that material used so little, that they had been so flimsy as to disgust the all-consuming and most unfastidious million itself. The specimen he held in his hand was the lowest quality of tapestry carpet made in England. He might be told that some manufacturers had made a worse quality, but he believed there was no manufacturer who put a less quantity of material in than was contained in that he referred to; and he submitted that it was not to be spoken of in the way it had been in the paper. He would state the reason why a lower quality had been introduced, and in doing so he might be allowed to remark that, although there were no statistics on the subject, yet, from observations of his own on the continent, and also in America, he believed he was within bounds when he said that there were more carpets used in the United Kingdom than on the whole continent of Europe; and it was his conviction that there were more used in the United States of America than in this country and in the rest of Europe put together—although they had not more population than we had in this country. They found the effect to be

this. When they kept up a very high quality without making anything lower,—as soon as their carpets went out to America, they were copied by manufacturers there in an inferior material, and sold at a less price than English carpets could be sold for, and a great loss of trade consequently ensued. The Americans said—"You put far more material into these goods than can show itself, owing to the worsted being so closely compressed; and though we do not complain of your price for the article you make, we want something cheaper; we do not buy so many carpets of you as we should do if they were at a price to suit our customers. We would rather have three carpets than two at the same price." That was to say, if they had so much a year to spend in carpets, they would rather have three carpets to cost the same price as two, provided the appearance could be kept up, as they much preferred the clean appearance of a new carpet to retaining the use of a dirty old one even though the quality were good. They thought it was not very desirable to lose their American customers, and he might say that they had some experience to guide them in that respect in reference to the woollen cloth manufacture. In spite of the notions of the English manufacturer as to how it should be made, the Americans had different notions, and said, "if you will not make what we want we will get it somewhere else." Now what the Americans wanted for their climate and tastes in the article of woollen cloth, was a description made from what was well known in the trade as spun upon the condensing principle. That was a system of spinning rather between worsted and woollen, and made a silky, thin, strong cloth, that suited the Americans, but the manufacturers of this country held out that that was not the way to make woollen cloth, judging entirely from what was wanted in this country, and not taking into account the different circumstances they had to provide for, and thus the Americans had to go to the continent, and now almost the entire cloth manufacture was removed from this country to Belgium and Germany on that account. They (the Messrs. Crossley) were anxious to take a lesson by this mismanagement and make what their customers wanted; and he submitted that, in introducing that quality, they had not run it below what was desirable. He believed it would wear as long in proportion to its price as the best quality that was made. Mr. Whytock had spoken of it as though the whole thing was run down to the lowest quality; but the fact was, they were making a large quantity of the best quality for those who chose to pay the price for them. A remark also had been made, that it was coupled with "an unrighteous lowering of wages." If Mr. Whytock meant by that that since power looms had been introduced hand weaving had been reduced, he (Mr. Crossley) quite agreed with him; the same thing—the reduction in the value of certain descriptions of labour—occurred when railways were introduced. But if he meant to say that the reduction of wages had been such that the weaver made less money now by power than he used to do by hand, or that a less amount of wages in the gross was paid in carpet making than before the power-loom came into operation, he (Mr. Crossley) must say, that he (Mr. Whytock) was not thoroughly acquainted with the facts of the case. When the Exhibition opened in 1851 they had no power-looms at work for the carpet manufacture, and they paid 14½d. a yard for weaving velvet carpets by hand; when they introduced the power-loom they paid 2½d. a yard for weaving the same thing, it being done much better than when 14½d. was paid for it. Now the reduction in price was enormous, and yet, at this reduction, as their books testified, their weavers earned, on the average, twelve per cent. more by power than they did by hand for the same number of hours' work. A reduction was made in the goods in proportion to the saving effected in the weaving; and he would undertake to say that no one of the men now at work at power-loom weaving would accept hand-

loom weaving at 14½d. if it were offered them, unless their power-loom were taken from them. During the year 1851 they paid for wages on an average £150 a day, or £900 a week, but during the year 1855 they paid on the average £250 a day, or £1,500 a week; that was an increase of money paid in wages. Facts were stubborn things, and were better than a thousand arguments. He submitted that by these improvements an increased consumption on the part of the public was brought about, and the thing was doing a great good; for, although they were paying now twenty per cent. higher price for wool than they did in 1851, carpets were supplied to the public at a reduction in price of fourteen per cent. With regard to design, he quite agreed with Mr. Whytock that many gentlemen who had sprung from that Society, and others, had been far too arbitrary. Mr. Crace was the same; he spoke of a flat surface being the perfection of a carpet, and that any deviation from that was going away from the best. If he (Mr. Crace) had said that that was one good style, he (Mr. Crossley) would agree with him; but to say that that was the only good style, was equal to declaring that the Gothic style of architecture was the only true style, and that every house not built according to the principles of that style was bad. There were various styles of carpets as well as houses and everything else. With regard to shadows, he thought too much had been said in depreciation of shadows. They all knew that it was the fashion, when royalty was to pass, to strew the ground with flowers. Carpets indicated that if we threw down flowers in a room, with the light coming from one direction, they would reflect shadows; there could be no harm, in certain cases, in introducing shadows to that extent; if the public, when they put down carpets with shadows, placed the shadows towards the window, that, surely, could not be said to be the fault of the designer, and was a point which should be guarded against. If those gentlemen who talked so much about style had something to do with the difficulties to be contended with in manufacturing and bringing out the goods, they would find that sometimes the introducing a shadow would make the carpet much more effective, and cause it to sell much better. There was one other remark he wished to make, and that was with regard to the introduction of bagpipes and philabegs, and so on, into carpets. He was not aware that they had been introduced into carpets, but he was aware that they had been introduced into a mosaic rug, and he believed with very great taste. What he wanted to see was, that everything should be perfect in its style and good in its way. With regard to those mosaic rugs, although he was one of the manufacturers of that article, he did not think that there was any other fabric that did so much credit to the manufacturer as that did, because it had had so many difficulties to contend with. The one exhibited on the wall was the kind of rug he referred to, with a stag in the middle, surrounded by the tartan and other appendages, and forming a regular Scotch piece. That rug would always sell well, because it was a grand composition, and had something very novel about it. He submitted that, although it would be very bad taste to put such a design into a carpet, where it would be repeated all over the room, in a rug, which was only the centre of attraction, it was very effective. Last year he took out a patent for making another rug, on the back of a different pattern, so that there was one on one side for every day, and one on the other for Sundays and special occasions.

Mr. LAPWORTH was an advocate for the use of the power loom. In his younger days they used to pay as much for hand weaving when two colours only rose to the surface as was now paid for five. The consequence of the introduction of the power loom was, that there was a much greater consumption of carpets, and, as a matter of course, a greater number of men employed, and the less wealthy portion of the community would enjoy the comfort of a moderately good carpet, which had heretofore been considered articles almost of luxury. In matters of taste, he quite agreed with Mr. Crossley, that a manufacturer, in order to produce a large return, must cater for

the million. Those who required articles of a higher taste could have them by paying for them. It had been stated, that in the Axminster manufacture, the designs had of late years become very inferior, but it must be remembered, that the designs were furnished to the manufacturer by the party requiring them; and he would like to know the manufacturer who would refuse to make an article according to a particular design, however contrary to good taste that design might be. He was glad to find his trade had commanded the notice of the Society of Arts. It had been complimented and elevated very much by Mr. Crossley, who had addressed the meeting so eloquently, and particularly by his becoming one of our legislators, a position which all in the trade could not hope to aspire to, although it would stimulate others, and thereby advance this important branch of our manufactures.

Mr. J. K. HARVEY said that he was glad to hear the liberal opinions expressed by Mr. Whytock respecting the application of design to carpet manufacture, and begged to thank him for them. That fearful monstrosities had been produced in this department, was a fact which he must at once admit. At the same time, the arbitrary rules laid down by some of our decorators and artists respecting flat ornament and geometrical treatment, could not be carried out, as a general principle, by our manufacturers. This had been fully tested, both by the actual manufacturers and by retail dealers who were in the habit of getting their own designs manufactured. However Mr. Crace and others might advocate the flat principle of ornament for carpets, the public would not be satisfied with it; the ladies of this country, from the Queen on the throne down to the most humble of her sex, had, and he trusted always would have, great influence in this department, and he felt certain there were many gentlemen present who would fully bear him out when he said that, nine times out of ten, the most accomplished of the fair sex would prefer an arrangement of flowers or foliage to all the geometric forms ever produced. He did not wish by any means to deprecate the geometrical or flat style of design—both it and the floral were good in their place, when judiciously applied. Both were necessary to satisfy the desire which exists in the human mind for novelty, and most assuredly the manufacturer who attempted to carry either style out, and that alone, would fail in his efforts, and lose his money into the bargain. Before he sat down he wished to say a few words in defence of the manufacturers; that they had been guilty of bringing out some very extraordinary productions he granted, but they were not to blame for all. He could point to many instances where the parties who advocated the severe school principles had got their own designs done on their premises; and in the course of preparation for the loom such drawings had passed through his (Mr. Harvey's) hands. He had watched their progress, and the result had been complete failure, as the shelves of those who embarked in such speculations fully testified. Again, the private customer sometimes insisted on a particular style of pattern; the artist was sent for, and, whatever his private opinion might be, his duty was to supply the wants of the customer; the design was manufactured, and went out to the public as a specimen of the bad taste and bad judgment of the artist and manufacturer, when, in fact, the fault lay at the door of the fastidious customer whose peculiar whim had to be gratified. In this manner he had been obliged to execute flowers floating on water, rampant lions and greyhounds stuck into the four corners of the room, and such like abortions. No artist would, of his own accord, produce such things, and no manufacturer would, as a speculation, purchase such productions, should the artist foolishly attempt them.

Mr. W. WOOD, after being twice called upon by the chairman, as the first inventor of the application of power to the weaving of Brussels and velvet pile carpets, said, that he felt considerable difficulty in speaking on Mr. Whytock's paper, as, instead of its being "On Recent Improvements in Carpet Manufacture," it was principally on

its ancient history and on design, and that part of it which did treat on recent improvements was chiefly filled with an account (and that no novelty) of an improvement in warp-printing by a relative of the author's, whilst the mechanical improvements of recent times, which had created the greatest revolution that ever did occur in the carpet manufacture, were but very slightly dwelt on. As he (Mr. Wood) was the originator of, and had been chiefly occupied in carrying out, these mechanical improvements, he did not think it necessary or advisable that he should dwell upon them at the discussion of a paper which, whatever its title might profess, was nevertheless mainly treating on other matters. However, as the subject had been publicly alluded to, he would, if the Society of Arts wished it, write out, at his earliest opportunity, such an account of the application of steam-power to carpet weaving as his experience in it should enable him to do.* He thought this would be a better course than mixing up, as it were incidentally, the most important change that ever occurred in the carpet trade, with an account, however interesting it might be, of the labours of ancient goddesses and ladies in the making of carpets, or with the disputes between the doctors of design respecting what is or is not the proper mode of ornamenting carpets.

The CHAIRMAN said, the hour had arrived at which it was usual to close their discussions, and, in rising to move a vote of thanks to Mr. Whytock, for the very interesting paper he had read that evening, he would not detain the meeting by any lengthened remarks. Mr. Wood had given them some notion as to the difficulties inventors had to contend with in bringing their inventions into operation as commercial undertakings. Mr. Richard Whytock had also experienced great difficulties in bringing into operation his beautiful and ingenious invention for the manufacture of tapestry carpets. He went to Kidderminster and made arrangements with two of the most important manufacturers, at that time, to work his invention, but neither of them carried out the arrangements they had entered into. Finding that he could not induce any of the carpet manufacturers to work his invention, he persevered and worked it himself successfully for several years, but nevertheless did not succeed in overcoming the prejudices of the Kidderminster manufacturers. Fortunately for himself he called upon Messrs. John Crossley and Sons, of Halifax, who were not slow to perceive the advantages of his invention, and entered into an arrangement to work it under license. The result proved that the value of an invention mainly depends upon the skill and enterprise of the parties who work it. Mr. Sievier had been for several years working at his invention without any beneficial result, until it was taken up by Messrs. Bright and Company, in combination with the process of printing piled fabrics invented and perfected by Mr. Burch. The enterprise of Messrs. Bright and Company, coupled with the invention of Mr. Burch, gave a commercial value to Mr. Sievier's new mode of weaving piled fabrics, which had failed to obtain until taken up by them. Mr. Bigelow had a hard struggle in the United States, but when he exhibited his samples of Brussels carpeting woven by steam-power in the Great Exhibition of 1851, and brought them under the notice of Messrs. Crossley, together with the fact that he was working in the United States twenty-five or twenty-seven looms, they at once perceived the commercial importance of what he had achieved. Mr. Bigelow's patents and Messrs. Crossley's patents were conflicting, but instead of going to war with each other they wisely preferred peace, and coalesced their interests. But for the manufacturing skill and enterprise of Messrs. Crossley, the great advantages of Mr. Whytock's invention might not yet have been fully developed; and since their adoption of Mr. Bigelow's loom for weaving Brussels carpets by steam power, in the beginning of 1852, not less than 250 looms had been put to work, superseding at

least 1000 hand looms. It was worthy of remark, that Messrs. Crossley had so far improved the loom sent over by Mr. Bigelow from the United States in 1852, that some of the looms made upon that plan had actually been broken up, although costing from £80 to £100 each, in order to replace them with looms possessing the improvements subsequently made by Messrs. Crossley, so rapid had been the march of improvement during the last four years, in looms for manufacturing Brussels and velvet pile carpeting. The economy effected in the production had likewise been very great. Under the hand-loom system there was but little difference in the cost of 2, 3, 4, and 5-frame carpets, while the cost of 6 or 7-frame was greatly enhanced. The result of the introduction of the power-loom had been to establish a proper relative difference in the cost of 2, 3, 4, and 5 frames, and to effect a saving of full 25 per cent. in the cost of six-frame Brussels and velvet pile carpets. All Persian and Turkish designs required six frames to give them proper effect, and hence the importance of the economy effected by the introduction of the power-loom, which would doubtless very soon entirely supersede the hand-loom. In the late Exhibition at Paris there were some beautiful specimens of tapestry carpeting from Berlin, the warps of which Messrs. Crossley had printed by Whytock's patent process, and which had been woven by their patent loom now in operation in that city. There were also some very good specimens of velvet pile carpeting from Vienna, but none made with printed warp, from which it was to be inferred that the manufacture had not yet been introduced into Austria. As regarded the subject of design, however, nature required variety. We were not always satisfied to look upon the same scenery, however beautiful. We liked the variations of the seasons, and we not only required different styles of design, but varieties of each different style, to suit the taste of everybody. Carpets the designs of which might be approved by persons of refined and cultivated taste, and which would find sale among a certain class in this country, if sent to the United States, or the South American market, would probably realise a loss of 40 per cent. to the merchant or manufacturer who ventured to export them. The manufacturer must supply the demands of his customers whether their taste were good or bad. With respect to design as applied to carpets, we were upon a par with our neighbours in France, except that there more care was evidently bestowed by the designer in preparing a pattern for the loom. The talent of the designer was also more highly appreciated, and more pains were accordingly taken to produce a perfect thing. On the wall was a specimen of real Persian carpet, and next to it a French imitation; the latter, possessing all the spirit of the former, was much more perfect in execution. Notwithstanding that we required varieties of style, he would say, that the pleasing effect of a carpet on the floor depended very much upon the flat treatment of the objects, whether flowers or ornaments, and upon a geometrical arrangement of the design. Any one who would take the trouble to observe a carpet in which the stems and branches were all running in one direction, and then went into another room where a design of a similar style was differently arranged, would find that the effect was much more agreeable in the latter than in the former. With regard to cheapness, Mr. Whytock and himself, who, he might say, dealt only with those who could afford to pay for a good article, were too apt to overlook the wants of the million and the competition in the export trade. He thought the observations Mr. Whytock had made upon that subject had not received sufficient consideration; again, as regarded the large manufacturers, he (the Chairman) thought, so far as the carpet trade was concerned, they had always produced the best goods. The excellence of Messrs. Crossley's tapestry carpets was pre-eminent over all others of the same description. Their qualities of excellence and cheapness were fully appreciated at the late Exhibition in Paris, and acknowledged by the award of a "Medaille

* Mr. Wood has been asked to prepare such a letter for publication in the *Journal*.—SEC. SOCIETY OF ARTS.

d'honneur," and in addition the senior partner in the firm was made a Chevalier de la Legion d'Honneur. Mr. Wood was awarded a first-class medal for his loom, and, doubtless, had he brought under the notice of the jury the fact of his being the first inventor of a loom for weaving carpets by steam power, he would have received a still higher distinction, the wish and intention of the Imperial Commission being to confer honour upon original inventors. He would conclude by moving the cordial thanks of the meeting to Mr. Whytock.

Mr. CROSSLEY, M.P., had great pleasure in seconding the vote of thanks to Mr. Whytock. He would make one remark with regard to France; however well they might succeed there in other things, they were certainly not very successful in the manufacture of carpets made in breadth. They put a good deal of material in them, but not in a workmanlike manner, so that they did not wear well. In proof of that, he might say they were continually sending carpets to France, and paying no less than 73 per cent. duty and expenses on them. He could not allow that opportunity to pass without speaking in the highest terms of Mr. Whytock's uncle, the inventor of the beautiful process of which he (Mr. Crossley) held a specimen in his hand. All credit was due to him, because he was not a manufacturer; he was a country dealer, in Edinburgh. With regard to the difficulty of introducing power at first, Mr. Whytock had a very kind and strong feeling towards the weavers, and believed that its introduction would be to their detriment. His opinion had certainly very great weight with them (Messrs. Crossley), and they found no difficulty in getting as many workmen as they wanted to weave by hand, and it was not until the Americans really began to apply power, and threatened to shut them out of the market, that they were in right earnest about starting power-looms. The consequence had been that, instead of there being now half-a dozen manufactories of tapestry carpets in America, they were reduced to a single one—and the owner of that had even offered to sell it to Mr. Crossley at cost price, when he was over there last autumn, stating he could make better interest of his money by buying property in New York to let, than by making tapestry carpets. In conclusion, he had very great pleasure in seconding the vote of thanks to their esteemed young friend, to whom they were all very much indebted for his interesting paper.

Mr. WHYTOCK, in acknowledging the vote of thanks undeservedly accorded to him by that meeting, said, it might be permitted him to confess, that it was not his intention to have stirred up so much strife. He could see that some parties were offended because he had said too little, and others because he had said too much. His apologies were due for presenting the Society with a mass of mere undigested notes upon a subject which admitted of a much more ample treatment, but this, owing to his circumstance of leisure and opportunity, had not been accomplished. Discussion, however, had been excited, and many facts and opinions elicited, which it was well to hear. Perhaps, however, it might be allowed him to take exception to a remark passed by Mr. Wood—a remark rather disparaging to Mr. Richard Whytock's own individual experiment and practice upon his own patent process. He was sure that Mr. Crossley would agree with him when he said that Mr. Whytock had himself produced quite as good and praiseworthy specimens of his own patent carpets as any other manufacturer; neither had the working of the principle been improved since it left his hands.

The Secretary announced that the paper to be read on the evening of Wednesday next, the 27th instant, was "On Some of the Animal and Vegetable Products constituting the Foreign Commerce of Liverpool," by Mr. Thomas C. Archer. On this evening George Moffatt, Esq., M.P., will preside.

Since the meeting, the Secretary has received the following communication from Mr. Joseph Burch, of Crag, near Macclesfield:—

"I have to express my regret that I had not the opportunity of hearing Mr. Whytock's paper read, and the discussion thereon.

"Carpet printing, my province in this branch of manufacture, and certainly not a very inconsiderable feature in this subject, receives but faint mention from Mr. Whytock; and Mr. Sievier's mode of beating up the pile by the action of the loom, instead of forming it by the ordinary use of the wire, is rather slightly noticed. This ingenious invention is certainly deserving of more favour than Mr. Whytock has bestowed upon it, as, excepting in the lowest qualities, it makes a very perfect terry, and in velvet piles the product is most perfect, and of greater strength than cloth made by the ordinary power, or hand loom.

"In the absence of Mr. Sievier, it is, therefore, fair to state that I have printed, during the last seven years (in partnership connection with Messrs. Bright and Co.), nearly four millions of yards of carpets, woven by Mr. Sievier's loom, including terry surface and velvet pile cloth of different qualities. I will, therefore, take the liberty to suggest, with all deference to Mr. Whytock, but in justice to Mr. Sievier, that the word 'successful' be introduced into that paragraph of the paper wherein it states that Mr. Sievier 'made an attempt' to beat up a pile without the use of the wire.

"In respect to the printing of terry Brussels and velvet pile carpet, I may state that, however unsuccessful all former attempts proved in the application of the colour and design to this description of fabric, it is now the daily avocation of ordinary workmen. Mr. Whytock, in his paper, states, 'the plan of stamping, instead of weaving, could never be brought to succeed. The strong surface woollen thread, raised into loops, or cut open into a bristly elastic pile, was not only injured by the blocks, but it also failed adequately to receive the required pattern. Every attempt to print the Brussels carpet turned out a failure.' With this evidence, I believe I may fairly claim to be the first who succeeded in the art; and as I make no secret of the manner in which I print upon terry and velvet pile carpets, I will, with your permission, add to the paper which I have promised you on Shawl Printing, a description of the mode by which I have not only succeeded in printing these rough materials without injury to the pile, but have also successfully driven the colours to the foundation of the terry, without destroying the delicate tracery of the design upon the surface. There now remains no difficulty in the production of designs upon carpets by this process; and I venture boldly to state, that there is no other mode which can bear comparison, in its general application to all styles, with the carpet-printing machine; for, with equal facility, every variety of design may be produced, from the delicately-tinted floral heaps which we are in the habit of walking upon, down to the unobtrusive mediæval or simple geometric; in fact, the carpet-printing machine will yield all fashions, including the most plain to the excessively elaborate, with little or no additional cost in the production. The principle of printing is identical in Mr. Whytock's warp-printing and by my method, the chemical combinations of the colouring matter the same; both are printed on wool, with only this distinction in the process, viz., the woollen warp is printed before it is woven, and the woollen pile or terry afterwards.

"With respect to the quantity of 'cheap rubbishing' carpets, to which Mr. Whytock's paper refers as being produced at the present time, I would suggest that this description is the poorer man's carpet—carpets for the million—yielding comforts hitherto beyond the reach of the industrious and honest artisan, and adding social benefits and new pleasures to his humble cottage-home. Such qualities need not interfere with the ordinary sale of Axminster, Wilton, and the superior carpets, neither should

envious feelings pervade the minds of the favourites of fortune, because the floors of the humbler classes are by their introduction slightly strewn with flowers. Those who desire more rich and expensive floor coverings, and who, too frequently, can only estimate them by their price, may still maintain the distinction, and indulge the most extravagant taste, for, be assured, there are to be found many carpet dealers who will very obligingly charge the most exorbitant prices, in order to suit the requirements of this rather exclusive class of customers."

SURPLUS FROM PATENT OFFICE FEES.

A meeting of the Committee appointed by the Council to consider and report upon the letter of Sir Joseph Paxton, was held at the Society's House on Monday last. There were present, Lord Stanley, M.P., who was called to the chair, as Sir Joseph Paxton, M.P., was not able to attend at the commencement of the meeting, Messrs. W. B. Adams, J. G. Appold, F.R.S., J. M. Blashfield, J. Burch, Dugald Campbell, Henry Cole, C.B., Dr. J. H. Gilbert, Joseph Glynn, F.R.S., Peter Graham, Owen Jones, J. C. McDonald, J. D. Morris Stirling, and G. F. Wilson, F.R.S. The following gentlemen also attended by invitation:—Messrs. T. Aston, R. Fletcher, T. Webster, F.R.S., B. Woodcroft, and C. Wordsworth.

It was moved by Mr. Joseph Glynn, F.R.S.; seconded by Mr. G. F. Wilson, F.R.S., and

Resolved,—That this Committee, in conjunction with the Committee of the British Association, wait upon the Commissioners of Patents and explain to them the objects of this and the former meeting, and ask their countenance and support.

It was moved by Mr. J. D. Morris Stirling; seconded by Mr. J. C. McDonald, and

Resolved,—That the following gentlemen be requested to act on a Sub-Committee, for considering the details requisite to be carried out for placing the Patent Office in a state of efficiency:—

Mr. Theo. Aston.	Sir Joseph Paxton, M.P.
Mr. Dugald Campbell.	Lord Stanley, M.P.
Mr. Henry Cole, C.B.	Mr. J. D. Morris Stirling.
Mr. Peter Graham.	Mr. G. F. Wilson, F.R.S.
Mr. Charles May.	

The following gentlemen have been added to the Committee:—Messrs. Robert Fletcher, Capt. L. L. Boscawen Ibbetson, F.R.S., Henry Medlock, and Henry Roberts.

Home Correspondence.

TONNAGE REGISTRATION.

SIR,—With reference to Mr. Mitchell's letter on the "Liability of British Shipowners," published in the *Shipping and Mercantile Gazette* of the 11th inst., and in the *Society of Arts Journal* of the 15th, I am happy to find Mr. Mitchell in co-operation with myself, amounting even to rivalry, as to who shall promulgate the greatest amount of truth with a view to the prevention of shipwreck.

In my paper on Tonnage Registration, read before the Society of Arts on the 16th ult., the deficiencies of our present tonnage registration, not the general merits of the Merchant Shipping Act itself, was the subject matter of my exposition; and I exemplified this deficiency by alluding to various *minutiae* of Government supervision of railways with a view to public safety from accident as being in striking contrast with the deficiency of Government supervision of shipping, by showing that all the detail of railway appliance is officially scrutinised, whilst the deep loading of ships, on which safety at sea so much depends, is not subjected by law to any restriction or official check, and is absolutely overlooked. Mr. Mitchell, in the discussion

on my paper, rather reflected on me for not having brought forward the obligations imposed on shipowners for the prevention of accidents at sea; consequently, in my letter of the 17th ult., published in the *Society of Arts Journal* of the 25th, I quoted various items of shipping requirement referred to in Part 4 of the Merchant Shipping Act for the prevention of accidents at sea; observing, however, that the deep loading of ships is not recognised by the Act as having anything to do with nautical danger; but still Mr. Mitchell is not satisfied, and by his letter published in the *Shipping and Mercantile Gazette* of the 11th inst., and in the *Society of Arts Journal* of the 15th, Mr. Mitchell himself brings forward Part 9 of the Merchant Shipping Act, observing that it is "entirely devoted to the liabilities of shipowners; and, from its having a special heading to denote this fact, it cannot be easily overlooked." Now, since Mr. Mitchell thus insists on this Part 9 of the Merchant Shipping Bill not being overlooked, though, in my opinion, irrelevant to Part 2 on Tonnage Registration, I would, in the first place, observe, that Mr. Mitchell, in his description of Part 9, as above quoted, has omitted the significant word "*limitation*." Part 9 of the Merchant Shipping Act of 1854, is textually devoted to the "*limitation of liability*," which is an important distinction in contrasting railway and shipping liabilities, because I am not aware of any Act of Parliament to regulate the "*limitation of liability*" in the case of railway accidents. For example, among other items of "*limitation of liability*" in case of wreck, we find as follows:—"The shipowner shall not be answerable in damages to an extent beyond the value of the ship and the freight due or to grow due;" but, as some check against worthless ships being employed, the Act prescribes that "the value of the ship and freight in no case to be taken at less than £15 per register ton." And again, "The damages payable in each case of death or injury shall be assessed at £30"—(£30 per soul, neither more nor less.) Perhaps Mr. Mitchell will excuse my enumerating all the further "*limitations of liability*" under which, by Part 9 of the Act, shipowners are groaning. To exemplify the hardship imposed by the value of the ship and freight being assessed at £15 per register ton, such being the ordinary value of a sound, well-found ship, the case of the wreck of the emigrant ship *John* has been referred to by Mr. Mitchell, who states that the *John*, a ship of 465 tons register, "in May last, bound to Canada, with about 300 lives on board, was lost off Falmouth; the greater number of the passengers unfortunately perished, and the penalties of the Act were put in force." The grievance complained of in this case is, that the penalty was assessed at £15 per register ton, whereas the *John* was not worth one-third of the money. The editor of the *Shipping and Mercantile Gazette* writes as follows:—

"Would any of our readers, acquainted with the value of shipping, have been disposed to purchase the *John*, before she left Plymouth, at one-third of £15 per ton? "Here is a ruinous liability of, say £7,000 thrown on property that would, in all probability, be highly estimated at £2,000."

Now, does not this case of the *John*, a ship in which 300 lives were embarked, though not worth £5 per register ton, indicate that commercial shipping management sets all the penalties of the present law absolutely at defiance as respects human life. Cargo liable to damage from getting wet, such as cottons, teas, and sugars, cannot with commercial prudence be risked, like British subjects, in ships worth only £5 per ton. As to the amount of penalty liable to be exacted in the case of the *John*, on account of her 263 souls on board, "most of whom unfortunately perished," I believe that cases of railway accident can be quoted in which a greater amount of penalty has been actually paid in consequence of the death of one single individual than was exacted for the whole number of passengers who perished by the wreck of the *John*.

Mr. Mitchell appears, by his letter, to regard it as a great hardship that shipowners should in any respect be responsible for accidents from wreck at sea, inasmuch as their officers and servants are obliged to obtain a government certificate as to their competency for their duty. This question is quite irrelevant to my paper. Further, Mr. Mitchell states his conviction that "99 in every 100 of our shipowners knew nothing whatever of the nature or tendency of the new tonnage law until it was in full operation." Is it, therefore, a fact that the few gentlemen who constituted the various deputations of shipowners on the occasion of the preparation and passing of the Merchant Shipping Bill of 1854, were a self-constituted body, acting without the recognition of 99 in every 100 of our shipowners; and is this the personification of shipowners, in respect of whom it has been said that the Merchant Shipping Law of 1854 "has given every satisfaction to the Interests who are the best judges of its merits, or for whose Benefits it has been established?"

I am, sir, your very obedient servant,
CHARLES ATHERTON.

Woolwich Dockyard, Feb. 18, 1856.

DECIMAL SYSTEM FOR BANKERS AND MERCHANTS.

SIR,—I beg to contradict a statement in circulation to the effect that I have abandoned my proposal for a decimal system for bankers and merchants, to be founded on the twelfth or the hundredth of a pound as unit of account, which plan has been fully explained in the *Journal*, and against which I have met with no valid objection.

Your obedient servant,
SAMUEL A. GOOD.

H.M. Dockyard, Pembroke Dock,
Feb. 19, 1856.

To Correspondents.

ERRATUM.—Page 209, col. 1, seventeen lines from bottom, for £120,000, read £1,200,000.

MEETINGS FOR THE ENSUING WEEK.

- MON.** Actuaries, 7.
London Inst., 7, Mr. John Ella, "On Music, Vocal and Instrumental."
Architects, 8, Mr. George J. Wigley, "Archæological Studies in Jerusalem."
Geographical, 8½, Capt. A. Parish, "On the Formation of Cyclones, and of the Tracks they pursue." 2. Mr. W. S. Gardner, "Notes on the Condition of the Gipsy Population of Moldavia, together with the Message of the Hospodar, relative to their Manumission." 3. "Extract of a Despatch from Governor O'Connor, dated Bathurst, Gambia, May 22nd, 1855, containing a report of his visit to the Island of Balama, on the West Coast of Africa."
- TUES.** Royal Inst., 3, Prof. Huxley, "On Physiology and Comparative Anatomy."
Civil Engineers, 8, Mr. G. P. Bidder, "On Mental Calculation."
Med. and Chirurg., 8½.
Zoological, 9.
- WED.** London Inst., 3, Mr. R. Grant, "On Elementary Astronomy."
Roy. Soc. Literature, 4½.
Microscopical, 7, Anniversary.
Society of Arts, 8, Mr. T. C. Archer, "On some of the Animal and Vegetable Products constituting the Foreign Commerce of Liverpool."
- THURS.** Royal Inst., 3, Professor Tyndall, "On Light."
London Inst., 7, Mr. R. E. Grant, "On the Natural History of Extinct Animals."
Antiquaries, 8.
Royal, 8½.
- FRI.** Royal Inst., 8½, Prof. W. Thompson, "On the Origin and Transformations of Motive Power."
- SAT.** Asiatic, 2.
London Inst., 3, Mr. E. W. Brayley, "On Geology."
Royal Inst., 3, Professor Odling, "On Organic Chemistry."
Medical, 7, Annual Meeting.

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.
[From Gazette February 15th, 1856.]

- Dated 19th October, 1855.
2343. William Armand Gilbee, 39, Rue de l'Echiquier, Paris—Improvements in the application of silicate of potash to hardening and preserving stones and calcareous metals. (A communication.)
Dated 10th December, 1855.
2785. Peter Armand le Comte de Fontaine Moreau, 4, South-street, Finsbury—Improvements in obtaining motive power by means of heated compressed air. (A communication.)
Dated 31st December, 1855.
2952. Sir John Scott Little, Pall-mall—Improvements in guns, fire-arms, and implements of war connected therewith.
Dated 17th January, 1856.
132. William Westbrook Squires, M.D., Liverpool—Improvements in preventing the bursting of pipes and tubes for conveying liquids.
Dated 23rd January, 1856.
178. William Johnson, 47, Lincoln's-inn-fields—Improvements in the treatment and application of fatty, resinous, and gummy substances, and in the manufacture of pastes, greases, and soaps. (A communication.)
Dated 25th January, 1856.
207. Alexis Jean Dessales, 13, Rue des Enfants Rouges, Paris—Improvements in oil lamps and in reflectors for the same for railway carriages and other purposes.
Dated 26th January, 1856.
209. Alexander Dalgety, 76, Florence-road, Deptford—Improved self-acting stand or stilt for casks or barrels.
211. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in compressed air locomotive engines. (A communication.)
213. Patrick Doran, 10, Cornwallis street, Liverpool—Improvements in pneumatic apparatus for raising sunken vessels or other bodies under water, and for keeping afloat vessels or other bodies liable to sink.
215. William Spurrier, Birmingham—Improved method of attaching handles to metallic tea pots and other vessels, which method of attachment may also be applied to the fixing of castors on furniture and other like purposes.
217. Wilhelm Dreschfeld, Manchester—Improvement in, or addition to, rollers employed in spinning.
219. Alexander James Walker, New York, and William Bennett, Brooklyn, New York—Improved method of forming hat-bodies, or other felted articles.
Dated 28th January, 1856.
220. Abram Longbottom, 41, Moorgate-street, and William Longmaid, Victoria-cottage, Stoke Newington—Improvements in apparatus for generating and heating steam.
221. Peter and George Brown, Liverpool—Improvements in the method of cleaning, dressing, and preparing a certain description of seed or grain, called "dari," and frequently called "millet," and thereby rendering the same suitable for food.
225. Jean Baptiste Jules Hyppolite d'Auvergne, Blois—Improvements in portable writing or drawing desks.
227. Pierre Emmanuel Guérinot, Rue au Maire, Paris—Stopping instantaneously two railway trains running against each other.
229. Samuel Jabez Goode, Aston, near Birmingham—Improved gas stove.
231. Jean Hector Destilbeaux, Paris—Improved waterproof fabric.
233. Henry Samuel King, Cornhill—Improved apparatus for printing and embossing. (A communication.)
Dated 29th January, 1856.
235. William John Simons, Royston—Improved governor for steam and other engines requiring governors.
237. William Henry Lancaster and James Smith, Liverpool—Improved arrangements for the application of gas and atmospheric air to the generation of heat in furnace or other flues, and the consumption of smoke.
239. James Fleming and George Fyfe, Glasgow—The consumption of smoke in engine and other fires.
241. William Fowler and William McCollin, Kingston-upon-Hull—Improved thrashing machine.
243. Samuel Palmer Gladstone, Lea-cottage, Orchard-house, Poplar—Improvements in the construction of masts and yards.
245. Abraham Pope, Edgware-road—Improvements in the manufacture of iron, copper, tin, and lead.
Dated 30th January, 1856.
247. Robert Walter Winfield, Birmingham—Improvements in the manufacture of metallic bedsteads and other articles of metallic furniture.
248. John Henry Walsh, Portland-place, Clapham-road—Improvements in omnibuses.
249. John Toward, Glasshouse Bridge Iron Works, Newcastle-upon-Tyne—Improvements in iron shipbuilding and in iron plates therefore, which plates are also applicable to other purposes where great strength is required.
250. Charles Frederick Claus, Latchford, Chester—Improvements in the preparation of hides or skins, also applicable to the preparation of the entrails of animals.
251. Alfred Vincent Newton, 66, Chancery-lane—Improvement in the manufacture of cannon. (A communication.)
252. William Gossage, Widnes—Improvements in the manufacture of certain kinds of soap.
253. Thomas Fewster Wilkinson, 25, Bloomsbury-street, Bedford-square—Improvements in reaping and mowing machines.